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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/476,416	12/30/1999	Iksoo Pyo	042390.P7452	7822

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EXAMINER

DINH, PAUL

ART UNIT PAPER NUMBER

2825

DATE MAILED: 05/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/476,416

Applicant(s)

PYO ET AL.

Examiner

Paul Dinh

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9, 10, 12-22, 24, 25 and 27-30 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 11, 23 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 15 April 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

This is a response to the response filed on 4-15-02. The applicant argument regarding Lee et al. are partial persuasive; therefore the rejections based on Lee have been withdrawn. However, the applicant argument regarding Scepanovic are not persuasive; therefore, all the rejections based on Scepanovic are retained and repeated for the following reasons.

Drawings

This application has been filed with informal drawings, which are acceptable for expediting the application acceptance process only, formal drawings are required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 9-10, 12-22, 24-25, 27-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Scepanovic et al. (USP 5661663).

Regarding claims 1-2, 15, 20, 22, 27, Scepanovic discloses in fig 2-10, a medium and a method comprising:

identifying partial feasible routing solutions (clusters) corresponding to each of a subset of wires to be routed;

merging (i.e., fig 7a-c) the partial feasible routing solutions to identify one or more feasible routing solutions for the set of wires to be routed.

(Note that the limitations:

a. “a maze router” and “a deferred merging router” in claim 22 are merely the intended use; therefore, they cannot be relied upon to define over prior art that meets the claimed limitation; and

b. “that do not conflict” in claim 15 is merely the result of the recited limitation therefore, it cannot be relied upon to define over prior art that meets the claimed limitation)

Regarding claims 3, 16, 21, 28-29, the identified partial feasible routing solutions and feasible routing solutions are sorted/resorted by a cost function (software 34 and cost factor computation of figure 2, note that the limitations “first/second user/one or more user-selected/specified” are merely the intended use; therefore, they cannot be relied upon to define over prior art that meets the claimed limitation.

Regarding claims 5 and 30, the number of partial feasible routing solutions and feasible routing solutions are limited to a first and a second numbers, respectively (by software 34 of figure 2, also see claims 30-31).

Regarding claim 6, the method of claim 5 wherein merging comprise:

merging partial feasible solution in a routing tree, wherein the number of partial feasible routing solutions at each node of the routing tree may be limited (by software 34 of figure 2 and figures 5-9, note that the limitation "*user-specified limitation*" is merely the intended use; therefore, they cannot be relied upon to define over prior art that meets the claimed limitation)

Regarding claim 9, Scepanovic discloses in figures 2-10, a medium and a method of use comprising:

constructing multiple partial feasible routing trees (i.e., by the tree construction means 36 of figure 2 and diagrams 8a-c), each of the partial feasible routing trees identifying a set of partial feasible routing solutions for a subset of wires to be routed; and

merging (fig 7a-c) the multiple partial feasible routing trees to identify a set of feasible routing solutions for the set of wires to be routed.

Regarding claim 10, constructing multiple partial feasible routing trees comprises determining partial feasible routing solutions (clusters) for each of the subset of wires to be routed until all partial feasible routing solutions have been identified (by software 34 of figure 2, note that the limitation "*user-specified limit...*" is merely the intended use; therefore, they cannot be relied upon to define over prior art that meets the claimed limitation).

Regarding claims 12-14, 17-19, Scepanovic discloses:

(Claims 12-14) cost functions for partial feasible partial routing solutions, ordering/re-ordering, merging the partial feasible partial routing solutions (elements 34, 36, 38, and 42 of figure 2 and figs. 7a-c)

(Claims 17-19) limiting/reordering the number of possible routes of routing trees
cost functions for partial feasible partial routing solutions, ordering/re-ordering, merging the partial feasible partial routing solutions (elements 34, 36, 38, and 42 of figure 2 and figs. 5-9).

Regarding claims 24-25, the maze router and the deferred merging router are *merely* the intended use; therefore, they cannot be relied upon to define over prior art that meets the claimed limitation.

Response to the applicant remarks

In response to applicant's argument that the reference Scepanovic fails to show certain features of applicant's invention (independent claim 1 and also independent claims 9, 15, 20, 22, and 27), it is noted that the features upon which applicant relies: i, e.,

- an approach for routing interconnects between cell that have already been placed;
- a wire to be routed is to be routed between two fixed points and the feasible routing solutions comprise the variety of ways the wire can be routed between those two fixed point;
- and more specifically, the prior art Scepanovic does not disclose multiple different paths that can be used to create a given connection between two defined points nor identifying more than one route for a wire between to given points

are not recited in the rejected claim(s); therefore the prior art Scepanovic reads on the claimed limitation; Scepanovic identifies five levels of clusters for interconnecting/routing (fig 9); that is identifying partial feasible routing solutions, then Scepanovic teaches merging partial feasible routing solutions (fig 7a-c) for wires to be routed (by system fig 2)

Allowable Subject Matter

Claims 7-8, 11, 23, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7-8, 11 would be allowable because the prior art does not teach or suggest the steps in claims 7, 11;

Claims 23, 26 would be allowable because the prior art does not teach or suggest the engine and the router response as recited in claim 23.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is (703) 305-5662. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (703) 308-1323. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number 703-308-1782.

Paul Dinh

Patent Examiner

May 31, 2002



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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